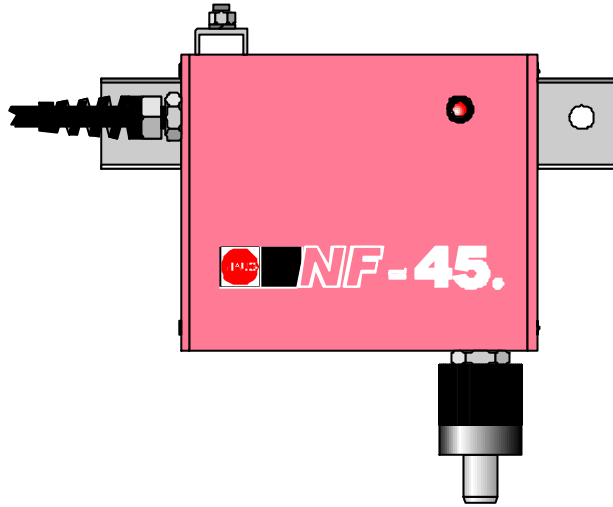


# Operating instructions NF 45 and NFA



## Operating instructions NF 45 and NFA



Static Line



V02



Types: NF 45  
NFA bar

**Keep in a safe place for future reference!**

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## 1 Notes on operating instructions

In these operating instructions, the power pack NF 45 is also referred to as "unit" and the NFA bar as "ionizing bar".

### 1.1 Pictorial markings used

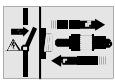
In these operating instructions



**Caution!**  
**Important instructions!**



**Danger!**  
**High voltage!**  
**Danger of fatal accidents!**  
**Do not open unit!**



**Only plug in/unplug coaxial connector  
when the unit is switched off!**

In the operating instructions and on the unit



**Danger!**  
**High voltage!**  
**Danger of fatal accidents!**  
**Do not open unit!**



**Only plug in/unplug coaxial connector  
when the unit is switched off!**

Caution – Do not operate  
without ionizing bar!

**Caution:**  
**Do not operate the unit without  
ionizing bar!**

## 2 Safety

The power pack NF 45 and the ionizing bar NFA are operationally safe, provided that they are operated in accordance with their intended use.

In case of misuse, dangers may result:

- for life and limb of the operator,
- for the unit and other assets.

Also note Chapter 4.1 (Important installation notes).



**Special safety instructions apply to operators with pacemakers; please apply to HAUG for details!**

### 2.1 Intended use of the power pack

The power pack NF 45 is intended exclusively for the high-voltage supply of HAUG ionizing bars type NFA. It generates an alternating high voltage of approx. 5.5 kV with a variable frequency of between approx. 400 – 800 Hz.

It is intended for the removal of electrostatic charges from, for example, glass, paper and plastics.



**The power pack must not be installed or used in areas subject to explosion hazards.**

For reasons of safety, unauthorized conversions and modifications of the unit are not permitted. The installation and operating conditions indicated in these Operating Instructions must be adhered to.

### 2.2 Intended use of the ionizing bar

The ionizing bar NFA generates positive and negative ions. These ions are used for the removal of electrostatic charges from, for example, paper, films and foils, textiles, glass and plastics.

For reasons of safety, unauthorized conversions and modifications of the ionizing bar are not permitted. The installation and operating conditions indicated in these Operating Instructions must be adhered to.

### 2.3 Danger sources

Defective high-voltage terminals and cables may lead to danger of electric shocks. Shut down the unit immediately in case of visible damage and suspected electrical defects.



***Danger!***  
***High voltage!***  
***Danger of fatal accidents!***  
***Do not open unit!***



***Only plug in/unplug coaxial connector  
when the unit is switched off!***

### 2.4 Installer qualifications

The unit may be installed by trained electricians only. The above mentioned person must have read the operating instructions and must follow the instructions, notes and safety advice.

### 2.5 Operator qualifications

The unit may be maintained and put into operation by trained electricians only or by authorized persons informed about the potential dangers. The above mentioned persons must have read the operating instructions and must follow the instructions, notes and safety advice.

### 3 Design, operating elements NF 45

Figure 1

1. Light-emitting diode (LED)
2. Earth terminal
3. High-voltage terminal
4. Supply voltage cable
5. Mounting plate

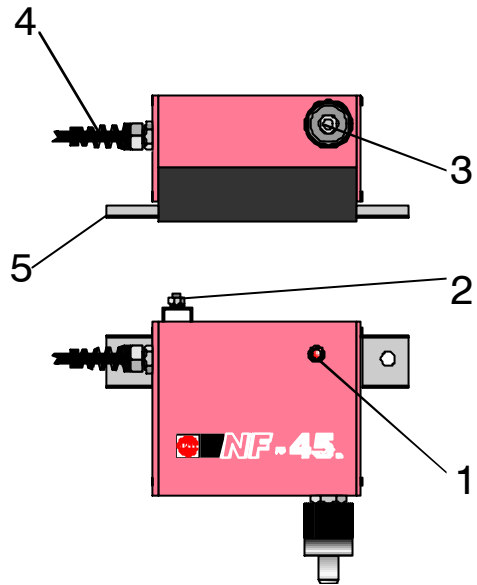


Figure 1

## 4 Installation

The unit may be installed by trained electricians only. The above mentioned person must have read the operating instructions and must follow the instructions, notes and safety advice.

### 4.1 Important installation instructions

The operation of the power pack is not affected by its position.

The ionizing bar contact is made directly at the power pack.

Do not place the power pack on a surface generating or radiating heat. Avoid exposure to direct sunlight.



**Only plug in/unplug coaxial connector  
when the unit is switched off!**

Caution – Do not operate  
without ionizing bar!

**Caution:**  
**Do not operate the unit without  
ionizing bar!**

### 4.2 Power pack

1. Attach the power pack with the ionizing bar at the desired point of use.  
Attach the power pack using the mounting plate supplied.  
Attachment to the ionizing bar alone does not suffice!
2. Connect the power pack to 24 VAC / 30 VDC only (see nameplate).  
In case of 30 VDC, connect the brown wire to positive and the blue wire to negative.
3. Connect the PE conductor (green-yellow) with the protective earth of the mains. Connecting the PE conductor via parts of a machine body is insufficient.
4. For additional safety, connect earthing on power pack (refer to Chap. 3 Fig. 1 earth terminal).
5. Connect the ionizing bar.
6. Switch on supply voltage.
7. The LED will light up yellow. The unit will perform an automatic self-calibration cycle (approx. 15 s).  
After the self-calibration, the LED will be illuminated green (ready for operation).



**Caution!**

Never operate the unit without ionizing bar, otherwise the destruction of the unit may result.

### 4.3 Ionizing bar

The bullet numbers refer to the figures at the end of these operating instructions.

- 1** - **2** Examples of ionizing bars.  
Ionizing bars are not effective over the whole bar length. The ratio of effective length (l2) to the total length (l1) is as illustrated in the figures.  
 $l2 = l1 - 160 \text{ mm}$ .
- 3** - **4** Most favorable distance of ionizing bars to the material approx. 20 - 30 mm, min. 10 mm, max. 80 mm.  
Number of ionizing bars:  
1 bar for web speeds of up to 100 m/min.  
2 bars for 100...200 m/min etc.
- 5** Distance B to earthed machine part must always be greater than distance A.
- 6** Install ionizing bars so that there are no machine parts behind the material.
- 7** For materials with particularly high insulation resistance:  
Install ionizing bars on top and at bottom, offset sideways by 20 mm (e.g. in case of films or foils, plastic sheets or similar).
- 8** Install high-voltage cables without kinks. Smallest bending radius 50 mm.
- 9** Never install holders above the ionizing pins.



## 5 Application

### Preconditions:

The power pack and the ionizing bar must be connected correctly.

The unit may be put into operation by trained electricians only or by persons instructed in the potential dangers. The above mentioned persons must have read the operating instructions and must follow the instructions, notes and safety advice.

### 5.1 Switching on

- 1 Switch on supply voltage.
- 2 The LED will illuminate in yellow. The unit will perform an automatic self-calibration cycle (approx. 15 s). After the self-calibration, the LED will be illuminated green. The green LED indicates readiness for operation.



**With overload at the ionization staff the equipment switches off. For a restart the equipment must be separate from supply voltage at least 10 s.**

## 6 Remedy of defects

Any remedy of defects must be carried out by trained electricians only. The above mentioned persons must have read the operating instructions and must follow the instructions, notes and safety advice.

In case of malfunctions in connection with the power pack and the ionizing bar, check for correct installation first. If this does not solve the problem, please return the power pack with the ionizing bar for a check-up.



***Danger!***  
***High voltage!***  
***Danger of fatal accidents!***  
***Do not open unit!***



***Only plug in/unplug coaxial connector  
when the unit is switched off!***

### 6.1 Power pack

Check installation in accordance with Chapter 4 (Installation).

Caution – Do not operate  
without ionizing bar!

**Caution:**  
**Do not operate the unit without  
ionizing bar!**

If required, remove the power pack with the ionizing bar from operation and return to HAUG for checking and repair.

### 6.2 Ionizing bar

Check installation in accordance with Chapter 4 (Installation).

If required, remove the power pack with the ionizing bar from operation and return to HAUG for checking and repair.

## 7 Maintenance and repairs



***Danger!***  
***High voltage!***  
***Danger of fatal accidents!***  
***Do not open unit!***

### 7.1 Power pack

This unit does not include any parts which can be maintained or repaired by the operator. HAUG only is authorized to repair or calibrate the unit.

Should the unit prove defective or if a defect is suspected, switch off unit immediately and secure against subsequent reuse.

### 7.2 Ionizing bar



Clean at intervals of no more than 14 days using the special cleaning brush RB1 and special cleaning fluid SRM1 or the special cleaning system RS1 (refer to "Accessories").

### 7.3 Accessories

#### Ionizing bar:

Special cleaning fluid SRM1	10.7220.000
Special cleaning brush RB1	10.7218.000
Special cleaning system RS1	10.7218.001
Circular brush for special cleaning system TBR	X – 6822

## 8 Technical data

### 8.1 Power pack

#### Characteristics and specification

(Reference temperature 23 °C).

High-voltage terminals	1 HAUG high-voltage terminal
High-voltage	$U = \text{ca. } 5.5 \text{ kV}$ at approx. 400 – 800 Hz
Short-circuit current	$I_k < 1 \text{ mA}$
Connected load	0.5 – 2.5 m
Cannot be used in pulsed mode	

#### Supply voltage

Type	Nominal value	Operating range	Frequency range	Power input
NF 45	24 VAC	+10 / -5 %	50 - 60 Hz	$P_{\text{max}} = 20 \text{ VA}$
NF 45	30 VDC brown positive blue negative	+10 / -5 %	0 Hz	$P_{\text{max}} = 20 \text{ VA}$



**Always connect earth conductor (green/yellow)  
to protective earthing of mains!**

**Ambient conditions****Ambient temperature:**

Rated application range	+5 °C to +45 °C
Extreme range for storage and transport	-15 °C to +60 °C

**Humidity:**

Rated application range	20 % to 65 % RH
Extreme range for storage and transport	0 % to 85 % RH

**Air pressure:**

Rated application range	800 mbar to 1060 mbar
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**Vibrations:**

Extreme range for storage and transport	max. 1.5 g (10 to 55 Hz), 1h shock: max. 15 g in each direction
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Recommended service position	vertical, supply cable downwards
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**Housing**

Degree of protection	IP 54
Protection class	I
Connection to supply voltage	10 m fixed on unit

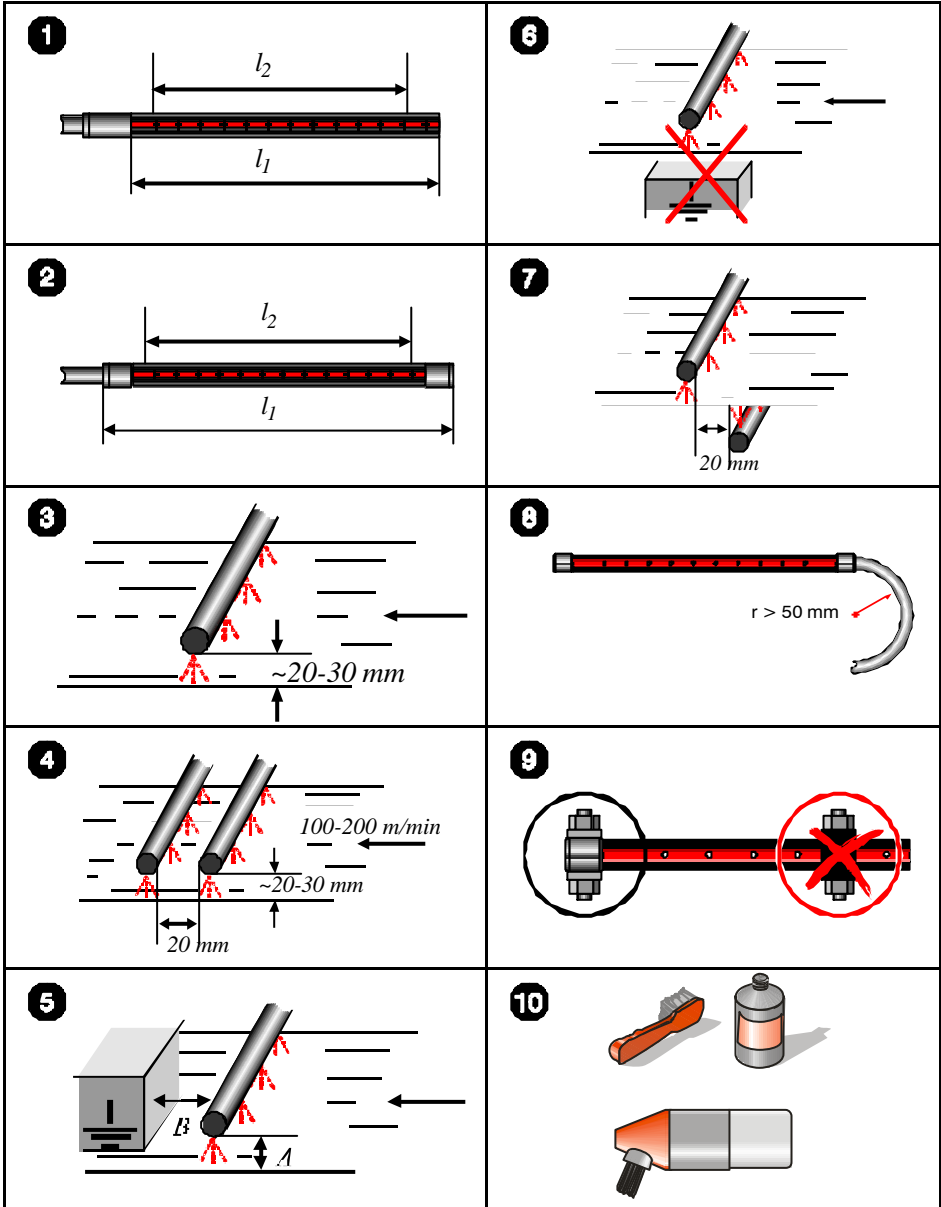
**Dimensions:**

Height	125 mm
Width	105 mm
Depth	75 mm

Weight	approx. 1 kg
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**8.2 Ionizing bar**

Diameter	∅ 20 mm
Available bar lengths	500 – 2500 mm





made by



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